ABSTRACT OF THE DISCLOSURE

A transmission actuator has a torque generating mechanism for generating a torque from a drive shaft, a speed reduction mechanism for multiplying a torque from the torque generating mechanism through a differential motion produced by a difference in gear ratio between a gearset of a first internally toothed gear and a first externally toothed gear and a gearset of a second internally toothed gear and a second externally toothed gear, a motion direction changing mechanism for converting the torque multiplied into a thrust and a friction engagement mechanism for transmitting power from an input shaft to an output shaft by virtue of the thrust so converted, wherein the drive shaft is made hollow so that the input shaft and the output shaft are disposed in a hollow portion of the drive shaft.